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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,802	10/15/2003	Johna Leddy	UIOWA-0055	1694
34610	7590	09/29/2006	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			ALEJANDRO, RAYMOND	
			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/684,802

Applicant(s)

LEDDY ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-72 is/are pending in the application.
- 4a) Of the above claim(s) 7-38, 41-47, 55 and 57-72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 39, 40, 48-54 and 56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 04/05/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This document is prepared in reply to applicant's amendment dated 09/12/06. Applicant has overcome the objections and the 35 USC 112 rejections. None of the prior art references has been overcome. Refer to the abovementioned amendment for more information about applicant's rebuttal arguments and remarks. However, the present claims are finally rejected over the same applied art as set forth hereinbelow and for the reasons of record:

Election/Restrictions

1. This application contains claims 7-38, 41-47, 55 and 57-72 drawn to an invention nonelected with traverse in Paper No. 02/23/06. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 04/05/06 was considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-3, 6, 39-40, 48 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Voss et al 5441819.

The present claims are directed to a self-hydrating membrane electrode assembly wherein the disclosed inventive concept comprises the specific water passing characteristic thereof.

As to claim 1:

Voss et al disclose a membrane electrode assembly 11 comprising an electrolyte in the form of a solid polymer ion exchange membrane 12 disposed between a pair of conductive electrode sheets (COL 7, lines 14-23). A solid polymer ion exchange membrane disposed between the anode and the cathode for facilitating migration of hydrogen ions from the anode to the cathode and wherein the membrane is permeable to water (COL 3, lines 45-50). Water accumulated at the cathode is drawn by a concentration gradient toward the anode across the membrane and is absorbed as water vapor into the hydrogen containing gas supply (COL 3, lines 50-60).

It is disclosed that the electrochemical fuel cell comprises an anode having a catalyst associated therewith for producing hydrogen ions from a hydrogen containing gas supply; a cathode having a catalyst associated therewith for producing anions from an oxygen containing gas supply (COL 3, lines 30-45).

Examiner's note: *it is noted that sufficient water is produced at the cathode side as a result of the electrochemical reaction occurring thereon and such water is sufficient to maintain a satisfactory level of hydration in the anode.*

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or

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a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28). *Furthermore, given that the layer of catalytic material is in direct contact with the electrolyte membrane, it is contended that mixing of catalytic material and electrolyte membrane occurs at the interface formed therebetween. Thus, the catalytic material contains such electrolyte membrane at least at the interface.*

As to claims 2-3:

Voss et al use Pt as a catalytic material (COL 7, lines 60-65). Disclosed is that each carbon fiber paper sheet for operation as the anode 20 and cathode 22 uses Pt (COL 7, lines 60-64).

As to claim 6:

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28). *Furthermore, given that the layer of*

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catalytic material is in direct contact with the electrolyte membrane, it is contended that mixing of catalytic material and electrolyte membrane occurs at the interface formed therebetween.

Thus, the catalytic material contains such electrolyte membrane at least at the interface.

As to claims 39-40:

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28).

As to claims 48:

Voss et al disclose that membrane 12 may have a thickness of about 0.01 inches or less because it has been found that thinner membranes significantly improve fuel cell efficiency (COL 7, lines 28-32). *It is noted that 0.01 inches is equivalent to 10 mil.*

As to claim 54:

The reaction of Voss involves the flux of reactants such as fuel gas and oxidant gas (COL 3, lines 30-49). *Absent further specific material description from the claim, it is contended that the flow and/or flux of reactant materials satisfy the claimed requirement.*

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-3, 4, 6, 39-40, 48 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voss et al 5441819 in view of Dhar 5242764.

The present claims are directed to a self-hydrating membrane electrode assembly wherein the disclosed inventive concept comprises the specific water passing characteristic thereof.

As to claim 1:

Voss et al disclose a membrane electrode assembly 11 comprising an electrolyte in the form of a solid polymer ion exchange membrane 12 disposed between a pair of conductive electrode sheets (COL 7, lines 14-23). A solid polymer ion exchange membrane disposed between the anode and the cathode for facilitating migration of hydrogen ions from the anode to the cathode and wherein the membrane is permeable to water (COL 3, lines 45-50). Water accumulated at the cathode is drawn by a concentration gradient toward the anode across the membrane and is absorbed as water vapor into the hydrogen containing gas supply (COL 3, lines 50-60).

It is disclosed that the electrochemical fuel cell comprises an anode having a catalyst associated therewith for producing hydrogen ions from a hydrogen containing gas supply; a

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cathode having a catalyst associated therewith for producing anions from an oxygen containing gas supply (COL 3, lines 30-45).

Examiner's note: *it is noted that sufficient water is produced at the cathode side as a result of the electrochemical reaction occurring thereon and such water is sufficient to maintain a satisfactory level of hydration in the anode.*

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28). *Furthermore, given that the layer of catalytic material is in direct contact with the electrolyte membrane, it is contended that mixing of catalytic material and electrolyte membrane occurs at the interface formed therebetween. Thus, the catalytic material contains such electrolyte membrane at least at the interface.*

As to claims 2-3:

Voss et al use Pt as a catalytic material (COL 7, lines 60-65). Disclosed is that each carbon fiber paper sheet for operation as the anode 20 and cathode 22 uses Pt (COL 7, lines 60-64).

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As to claim 6:

Voss et al further disclose the incorporation of additional ingredients into the electrodes, those ingredients are hydrophobic polymers such as Teflon brand polytetrafluoroethylene and/or a dispersing agent Teflon 30B (COL 7, lines 49-60). *It is contended that the disclosed additional ingredients are capable of imparting ion conductivity thereto.*

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28). *Furthermore, given that the layer of catalytic material is in direct contact with the electrolyte membrane, it is contended that mixing of catalytic material and electrolyte membrane occurs at the interface formed therebetween. Thus, the catalytic material contains such electrolyte membrane at least at the interface.*

As to claims 39-40:

Voss et al disclose that is known to use a perfluorosulfonic ion exchange membrane such as Nafion as the electrolyte membrane (COL 7, lines 24-28).

As to claims 48:

Voss et al disclose that membrane 12 may have a thickness of about 0.01 inches or less because it has been found that thinner membranes significantly improve fuel cell efficiency (COL 7, lines 28-32). *It is noted that 0.01 inches is equivalent to 10 mil.*

As to claim 54:

The reaction of Voss involves the flux of reactants such as fuel gas and oxidant gas (COL 3, lines 30-49). *Absent further specific material description from the claim, it is contended that the flow and/or flux of reactant materials satisfy the claimed requirement.*

Voss discloses a membrane electrode assembly as set forth supra. However, the preceding prior art reference fails to expressly disclose the ion conducting material

(Note: assuming arguendo that Voss does not expressly disclose the ion conducting material, a point not conceded by the examiner, see Response to Arguments below; this is presented just in case that applicant contends that Voss et al does not explicitly disclose ion conducting material in the catalytic material per se).

As to claim 1:

Dhar discloses solid polymer fuel cells wherein a proton conducting material is deposited as the electrolyte on top of the catalytic side of the electrodes acting as the anode and cathode (ABSTRACT). The electrodes have deposits of solid electrolyte thereon (COL 4, lines 8-14).

Concerning claim 4:

Dhar also discloses that the hydrogen electrode catalyst is Pt and the oxygen electrode catalyst is another oxygen reducing catalyst such as a macrocyclic chelate compound (COL 4, lines 50-59).

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the catalytic material comprising the ion conducting material of Dhar in the membrane electrode assembly of Voss et al as Dhar discloses that a proton conducting material deposited as the electrolyte on top of the catalytic side of the electrodes acting as the anode and cathode serves to separate the anode from the cathode. Thus, Dhar provides specific guidance that ion conducting materials incorporated in electrode catalyst material are helpful to further separate the anode side of the fuel cell from the cathode side thereof, thereby avoiding detrimental or catastrophic damages to the fuel cell.

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In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the different catalyst materials in the anode and cathode (the cathode catalyst and the anode catalyst are not the same) of Voss et al because Dhar teaches that, in fuel cells, an anode and a cathode use different catalyst materials to improve fuel cell performance. Thus, Dhar directly teaches the use of an anode catalyst which is different from the cathode catalyst.

8. Claims 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Voss et al 5441819; and/or b) Voss et al 5441819 in view of Dhar 5242764 as applied above to claim 39.

The teachings of Voss et al, alone or in combination with Dhar as seen supra are incorporated herein by reference. However, the preceding references do not expressly disclose the specific thickness of membrane as recited in claims 49-53.

As to claims 49-53:

Voss et al disclose that membrane 12 may have a thickness of about 0.01 inches or less because it has been found that thinner membranes significantly improve fuel cell efficiency (COL 7, lines 28-32). *It is noted that 0.01 inches is equivalent to 10 mil.*

In view of the above, it would have been obvious to a person possessing an ordinary level of skill in the pertinent art to make the membrane of Voss et al by the specific thickness of membrane as recited in claims 49-53 because Voss et al directly teach that membrane 12 may have a thickness of about 0.01 inches or less because it has been found that thinner membranes significantly improve fuel cell efficiency. Thus, Voss et al mention that membranes with a thickness of less than 0.01 inches (10 mil) are also desirable for the benefit of improving the

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efficiency of the fuel cell. In this case, a prima-facie case of obviousness does exist because Voss et al suggest to further reduce the thickness of the electrolyte membrane for specific purposes as those mentioned above. Therefore, Voss et al directly teach the use of a thickness within the claimed range. (*See In re Geisler*, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997). *See also MPEP 2144.05 [R-3] Obviousness of Ranges*).

9. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Voss et al 5441819; and/or b) Voss et al 5441819 in view of Dhar 5242764 as applied above to claim 2 and further in view of Biegert et al 2004/0241531.

The teachings of Voss et al, alone or in combination with Dhar as seen supra are incorporated herein by reference. However, the preceding references do not explicitly disclose the specific amount of the catalytic component.

Biegert et al disclose that is known to use catalyst materials with a degree of loading between (*in the amount of*) 0.4 mg/cm^2 and 4 mg/cm^2 in membrane electrode assemblies for self-humidifying fuel cells (P. 0026 & 0018).

In this case, it is noted that, at least, the end point (i.e. 0.4 mg/cm^2) constitutes a valid data point and thus it full encompasses the claim as the end point represents a specific disclosure of a discrete embodiment of the invention disclosed by the prior art which amounts to a complete description and, therefore, an anticipation of the claimed range. See Ex Parte Lee 31 USPQ2d 1105.

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific amount of the catalytic component of Biegert

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et al in the membrane electrode assembly of Voss et al and/or Voss et al-Dhar because Biegert et al discloses that such specific catalyst amount improves current/voltage characteristics of the membrane electrode assembly using the same. As such, the performance of the membrane electrode assembly is improved.

Response to Arguments

10. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection. See new ground of rejection in item 7.

11. Applicant's arguments filed 09/12/06 have been fully considered but they are not persuasive.

12. With respect to the 35 USC 102 rejection based upon Voss et al, applicant has contended that claim 1 requires that “*the catalyst on the surface of the cathode and anode must contain both a catalytic material (such as Pt, Pd, etc.) and an ion conducting material, such as Nafion*”; and that “*Voss does not teach or suggest such a device*”. However, nowhere does the present claims recite or require the specific materials as argued by the applicant. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *a catalytic material (such as Pt, Pd, etc. and/or an ion conducting material, such as Nafion)*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

13. Thereafter, applicant went to explain that “*TEFLON is not an ion conducting material...TEFLON is widely-recognized as one of the best insulators available in the world*”

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today”, consequently, applicant asserts that “*And as an insulator, TEFLON cannot possibly conduct ions*”. Well, applicant’s assertion may be correct, and there is no dispute about the conductive nature of material called TEFLON. Nevertheless, an analysis of the literal claim scope, as currently presented or amended, reveals the independent claim 1 requires only the presence of “*at least one ion conducting material*” without clearly specifying the particular degree of ion-conductivity and/or at least suggest that such “ion conducting material” positively promotes ion conduction. While the examiner does not dispute that TEFLON does exhibit a low degree of conductivity, the examiner strenuously avers that Teflon per se is capable of at least conducting few ions, as such, the legal language of the present claim still reads on the applied reference. In other words, even though TEFLON material may lack a micro-structural arrangement providing a suitable mechanism for high degree of ion conductivity, such as to promote conduction; applicant has not demonstrate that TEFLON itself is 100 % incapable of being an ion conductor. Therefore, although its rate of ion conduction is low, such low conductivity still reads on the language of the present claims which only calls for “an ion conducting material” without clearly specifying the requisite degree for conduction.

If applicant can show or demonstrate that TEFLON cannot, by any means, conduct ions or is incapable of conducting ions at all (*←emphasis supplied*) by presenting objective or sound evidence, then all applicable grounds of rejection on this matter will be removed; otherwise, the examiner asserts that the claimed invention, as currently drafted or written, does not overcome the prior art of record. Applicant should understand that a ground of rejection, while being scientifically or technically founded, is also based on a literal analysis of what the scope of a claim is, thereby permitting to fully contemplate all possible permutations consistent with the

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legal language employed to define the invention at hand and, ultimately, to protect the public from any misinterpretation or misconstruction of the claim language or implicitly claimed subject matter.

14. In response to applicant's argument that “*one in the art would not combine Voss and Dhar in the manner suggested by the Examiner*”, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Applicant has argued that the two references are not combinable because Voss discloses a polymer electrolyte membrane to separate the cathode and the anode, and Dhar discloses the elimination of the polymer electrolyte membrane separator, and in its place, some ion conducting material is incorporated into the electrodes for achieving separation. Well, applicant is overlooking the concept that the specific polymer electrolyte membrane of Voss as well as the “some ion conduction material” of Dhar both serve the same intended purpose and utility of separating the anode and the cathode to prevent the two of them coming into contact. Therefore, Dhar’s ion conducting material and the polymer electrolyte membrane of Voss both have the same functionality and they both act as an ionic separator for separating the anode and the cathode and for providing ion transport within the cell. As such, the examiner sees no differences, in term of function and ultimately structure, between the separation element of both references so as to arrive at the conclusion that one reference is not pertinent to the other or that one reference cannot modify the other. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly

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suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action (See item 7). Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER